

CITY OF HUTTO
HEART OF HUTTO
OLD TOWN MASTER PLAN

**PRELIMINARY WATER, WASTEWATER, STORM
DRAINAGE, UNDERGROUND UTILITY AND ROADWAY
CONSTRUCTION/RECONSTRUCTION ASSESSMENT**



Prepared For:
CITY OF HUTTO
401 West Front Street
HUTTO, TEXAS 78634-0639

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HLA Project No. 11220

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**HEART OF HUTTO
OLD TOWN MASTER PLAN
PRELIMINARY WATER, WASTEWATER
STORM DRAINAGE, UNDERGROUND UTILITY AND
ROADWAY CONSTRUCTION/RECONSTRUCTION ASSESMENT**

I. INTRODUCTION

Heart of Hutto is a designation of a special district in the City of Hutto representing the historic downtown area. The purpose of this report is to provide a preliminary assessment of the following items:

- Water System (On-Site and Off-Site);
- Wastewater System (On-Site and Off-Site);
- Conceptual Storm Water Management;
- Underground Utility Installation Potential; and,
- Roadway Construction and Reconstruction.

II. ULTIMATE BUILDOUT AND LIVING UNIT EQUIVALENT

To assist in preparing this assessment, it was imperative that projected density (buildout) information was derived. The projected buildout information would provide a basis for estimating projected water and wastewater demand. ERO International provided a listing of the Heart of Hutto proposed districts. There are eight districts based on different anticipated land use designations as shown in Exhibit A. These districts are designated as follows:

- The Co-op site
- T-4 Core
- T-4 Transition
- T-4 Urban Residential North
- T-4 Urban Residential South
- T-4 Arterial Commercial
- T-3 Residential North
- T-3 Residential South

The projected ultimate buildout calculations of the different districts are converted to living unit equivalent (LUE) to estimate projected buildout water and wastewater flow demand. LUE is defined as the typical water/wastewater flow that would be produced by a single-family

residence. An LUE is assumed to represent 3.5 people living in a residence. City of Austin LUE Guidance Document is used to determine the LUE conversion factor of each different type of development. Exhibit B presents the ultimate buildout LUE calculation for the Heart of Hutto district.

In addition to the buildout data, ERO provided information such as draft roadway cross-sections. The roadway sections were used to perform quantity estimates to develop probable construction costs for the various roadways within the planning area. The attached roadway probable construction cost data includes the draft roadway cross-section information for clarification.

ERO also identified areas where underground utility line installations are desired over existing overhead utilities. Exhibit I provides a location of these areas. It is recommended that the City pursue more rigorous discussions with utility service providers to ascertain costs, schedules, etc. for relocating existing utilities within these areas.

The following sections provide discussions of the assessment items. Under previous covers, a water and wastewater system plan for the Heart of Hutto district was performed. The following sections that apply to water and wastewater serve to supplement the previous plans by including consideration of the anticipated densities within the district, which were not available at the time the original plans were developed.

III. WATER SYSTEM IMPROVEMENTS

Exhibits C and D present the proposed water system improvement plan within the district (on-site) and outside the district (off-site), respectively. The on-site improvements mainly consist of upgrading existing small diameter water lines with six or eight inch lines. The on-site improvement plan also recommends interconnecting of pipes and looping water lines to enhance water pressure within the district. The proposed off-site improvement plan recommends installing large diameter water lines (12" and above) to interconnect with the on-site water distribution system. The multiple transmission line interconnects will provide redundancy in the system, enhance volume of flow into the district and maintain residual pressures at the desired level.

By taking the current peak daily water consumption flow and multiplying it by the projected total number of anticipated LUE within the Heart of Hutto District yields a projected

peak daily water demand within the district. A limited evaluation of this flow demand and its effect on the water distribution system was performed using a computerized hydraulic model simulation program. The results of the limited evaluation indicated that the existing water distribution system in the old town area appears to be capable of maintaining residual pressures greater than 20 psi at the projected demand plus a 1,500-gpm fire flow demand. This is a positive indicator for the system. However, pipe velocities (in certain locations) appear to be slightly higher than 10 ft/sec. In the desirable scenario, pipe velocities during peak flow demands shall be maintained lower than 10 ft/sec. The proposed on-site and off-site water system improvements will improve the water distribution capacity within the district. However, it is recommended that additional and more thorough investigations beyond the scope of this limited evaluation should be performed, such as field reconnaissance of static and residual water pressures prior to serving possible multi-storied mixed-use developments.

IV. WASTEWATER SYSTEM IMPROVEMENTS

Exhibit F presents the conceptual wastewater improvement plan. The proposed on-site improvements include replacement and/or extension of existing facilities with six inch or larger diameter wastewater lines. Off-site improvement includes installation of a 36-inch wastewater interceptor along Front Street (a.k.a. County Road 199) from east of F.M. 1660 to Cottonwood Creek, then along Cottonwood Creek to the existing influent headworks at the Hutto Central Wastewater Treatment Plant.

The wastewater average day and maximum wet weather flows are calculated using the LUE information as shown on Exhibit G. Each LUE represents 3.5 people with each person producing 70 gallons/day of wastewater flow.

As presented on Exhibits F and G, the proposed on-site improvement of wastewater lines within the Heart of Hutto district appears to satisfy the projected future growth. In most cases, the projected maximum wet weather flow appears to be less than 90% of the proposed wastewater line capacity. The existing 21-inch wastewater interceptor along Farley and Taylor Street appears to be adequate to serve wastewater flow for the Heart of Hutto sub-districts north of Highway 79 and future developable area north of the district.

Currently, the existing 15-inch wastewater line along Front Street serves areas in southwest Hutto. These areas include Lakeside Estates Subdivision, the Park Subdivision, the

Riverwalk Subdivision, the Country Estates Subdivision, Townwest Commons (Lowes, Walgreens, etc) and Hanson's Corner (Home Depot, Chilis, etc.). Once the Brushy Creek wastewater interceptor on the southern end of the town is completed along with the Hutto South Wastewater Treatment Plant, these areas and the lift stations that serve them, will be taken offline in favor of gravity flow to the new plant. In turn, the existing Front Street interceptor will be relieved from much of its current wastewater load. It appears then, that the existing 15" wastewater interceptor will be adequate to serve sub-districts south of Highway 79 as shown on Exhibits F and G once the new southern wastewater improvements are on-line.

V. CONCEPTUAL STORM WATER MANAGEMENT

Exhibit H presents a preliminary drainage map for the study area. The map identifies four drainage basins. Highway 79, FM 1660 on the north side, and Jim Cage Boulevard on the south side generally divide the basins. Each of the four basins has been further divided into anticipated storm water flow patterns. These patterns indicate anticipated direction of storm water flow by the use of flow arrows. The patterns and flow arrows allow a quick identification of possible locations where future storm water management structures (inlets, underground pipes, grates, etc.) may be needed to accommodate a subsurface storm water management system.

The information presented on the exhibit includes 2-foot contour data and floodplain data based on FEMA Flood Insurance Rate Map number 48491C0520E dated Sept 28, 2006. Based on the FEMA map, a portion of the northeast district is located within the 100-year flood plain. It may be prudent to consider performing a detailed drainage analysis to determine if properties located in this northeastern end of the proposed district are located outside the limits of the FEMA floodplain. If the study results are favorable, a FEMA map revision shall be pursued in order that these properties can be reclaimed for developable purposes. Based on historical flood accounts of this area, it appears that Park Street has rarely flooded, and an effort to reclaim the floodplain in this area may yield significant benefits.

The Northeast Basin (Basin NE) topography appears to slope primarily east towards Cottonwood Creek. As shown on the basin drainage map, the properties closest to FM 1660 north appear to slope toward the existing roadway. It is anticipated that storm water flow from these properties will continue to be directed towards FM 1660. Also, properties adjacent to

Highway 79 that slope towards the highway, will continue to receive storm water management service from the existing Highway. In fact, several new retail/commercial developments along Highway 79 have already received permission from the Texas Department of Transportation (TxDOT) to connect to its storm water management system. The Cottonwood Subdivision located in the northernmost end of this district currently collects and discharges storm water directly into Cottonwood Creek. It is anticipated that this practice will continue as is.

The Northwest Basin (Basin NW) generally slopes west towards the Hutto Square subdivision and the Co-Op property. As shown on the basin drainage map, the properties closest to FM 1660 north appear to slope toward the existing roadway. It is anticipated that storm water flow from these properties will continue to be directed towards FM 1660. Also, properties adjacent to Highway 79 that slope towards the highway, will continue to be provided storm water management service from the existing Highway. In fact, several new retail/commercial developments along Highway 79 have already received permission from the TxDOT to connect to its storm water management system. The Co-Op site development appears to slope towards the unnamed tributary west of the Co-Op site and the existing detention pond constructed to serve the Hutto Square and surrounding areas. Several streets in the northern reaches of this quadrant may be capable of draining storm water into the existing Hutto Square subdivision storm water system. It is encouraged to perform further study to verify such feasibility.

The Southeast and Southwest Basins include a relatively small drainage area. The southeast basin will be evaluated for directing flow east towards Cottonwood Creek. The areas that currently drain towards Front Street should be allowed to continue this practice. It may be prudent to investigate the possibility of routing storm water eastward under FM 1660 south and secure an easement to direct the flow toward Cottonwood Creek. Some areas east of FM 1660 south have experienced localized drainage issues because of the flat slope of the terrain and lack of suitable drainage infrastructure to allow adequate conveyance of storm water to Cottonwood Creek. The southwest areas around the existing City Hall buildings currently drain west into the Legends of Hutto subdivision drainage system. This practice is encouraged to continue as the Legends of Hutto subdivision storm water management system was designed to accommodate this flow into the existing channel and detention system.

Hutto has an interest in maximizing development potential within the Co-Op property and the adjacent storm water management system located west of the Co-Op site serving the Hutto Square subdivision. In order to determine what (if any) of the existing storm water detention pond and channel system could be reclaimed for development, it is recommended that a detailed drainage study be performed. The study shall include a review of the previous study performed by the developer's engineer, and may have to expand the study limits to include the entire drainage basin both upstream and downstream for the contributing area. The evaluation should also consider the existing culvert under Highway 79, its capacity and whether it should be replaced with a structure that has greater flow capacity.

Another alternative to consider would be to evaluate the feasibility to deepen the existing detention pond and install a drain pump to manage the incoming flow. This may enable a portion of the existing pond adjacent to the Co-Op property to be reclaimed. A wet pond design could also be considered. Prior to initiating the evaluation, the City should consider the alternatives and their respective costs to determine if the benefit to reclaim this property outweighs the costs.

Suffice to say, that at a minimum it appears that the existing detention pond and channel improvements could be turned into an amenity site by the installation of landscaping, trails, benches, etc. A wet pond design with a water recirculating fountain would be an added amenity for the site.

In the past, the City has considered the extension of roadway(s) west from the Co-Op site to Hutto Exchange Boulevard. This improvement would include a drainage structure across the existing channel/detention system. The detailed study to determine modifications to the existing drainage system for land reclamation should include an evaluation of the structure type and size for a future westerly roadway project.

VI. UNDERGROUND UTILITY INSTALLATION POTENTIAL

As mentioned earlier in this assessment, ERO provided a list of locations where underground utility installation was preferred (see Exhibit I). In areas where applicable, it may be possible to utilize the City's alley system for utility relocations.

A list of existing utility service providers is included in Exhibit E. The City shall initiate coordination meetings with the affected utility service providers to determine the

estimated costs of their respective utility relocation. Until preliminary design of the roadway improvement project(s) is performed, it may be difficult to assess cost estimate to any degree of satisfaction to address the utility relocation issue. For the purpose of this assessment, the following section concerning roadway construction and reconstruction costs have allocated a percentage of construction costs towards utility relocation.

VII. ROADWAY CONSTRUCTION AND RECONSTRUCTION

A preliminary evaluation of costs to construct new roads within the existing Co-Op property and reconstruct existing roadways within the planning area was performed. ERO provided guidance on information such as proposed road cross-sections.

The proposed Co-Op site roadway development plan will be developed over the existing site. The existing site was used primarily for storing and transferring crop products, with little if any consideration for platted roadways. The City should consider developing a comprehensive plan of the Co-Op site in order to clarify issues such as future rights-of-ways, easements, setbacks, etc.

The existing roads to be reconstructed within the Heart of Hutto planning area will require extensive planning and engineering to accommodate utility relocations, storm water management, sidewalk installation, driveway entrance to existing structures, etc. For the purpose of this limited assessment, the cost estimates were derived using the ERO guidelines for proposed roadway cross-sections assigned to the various existing roadways. Using the proposed cross-sections, quantities for HMAC, curb and gutter, flexible base, etc. were estimated.

A preliminary engineer's opinion of probable cost for new street construction in the Hutto Co-Op area and street reconstruction within the Heart of Hutto district was performed. The estimates are based on anticipated roadway cross-sections provided by ERO International as shown on Exhibit J. The preliminary engineer's opinion of probable cost to construct the new roads including water and wastewater improvements within the Co-Op site and reconstruct existing roads within the planning is approximately \$9,165,000 (Exhibit J). A breakdown for each of the proposed roadway improvement areas is included with the exhibit. The estimates were performed without the benefit of design plans.

VIII. CONCLUSION AND RECOMMENDATION

The above summaries the preliminary assessment of proposed water, wastewater, storm drainage, underground utility and road construction/reconstruction activities within the Heart of Hutto planning area. There were several major accomplishments to this task, to name a few, are as follows:

- The assessment indicated that the City's existing water and wastewater infrastructure appeared to be in adequate position to serve the projected growing needs within the planning area. By upgrading existing small diameter water and wastewater lines and performing several water approach main improvements, the Heart of Hutto planning area would appear to be poised to provide adequate service for the future;
- The City's decision to upgrade many of the existing roadways within the planning area was further clarified through this planning process. The upgrades are to include wider roads, on-street parking, curb and gutter, sidewalks, underground storm water system, underground utilities, and streetscape design features;
- The roadway improvement costs were estimated based on the proposed roadway cross-sections derived for particular roadway segments based on recommendations from ERO, City Planning Department and the public. These cross-sections served as the template(s) for performing preliminary takeoffs of pavement, curb and gutter, and related items that made up the basis of the probable cost estimates; and,
- The assessment embarked on the task of highlighting issues such as utility relocation, reclamation of property west of the Co-Op site and storm water management. These issues require additional planning, surveying and engineering to refine their respective hierarchy in the overall effort to redevelop the Heart of Hutto planning area.

Based on the above preliminary assessments, Hejl, Lee and Associates (HLA) provides the following recommendations:

- Amend the CIP plan to include the proposed offsite water system improvements identified in this assessment;
- Amend the CIP plan to include a small diameter water and wastewater improvement project to support the anticipated development;
- Conduct further investigation on static and residual water pressures in the planning area to assess the existing system's peak and fire flow capacity;
- Perform a comprehensive drainage study and storm sewer management plan for the co-op site and property west of it to determine if any portion of the detention pond can be reclaimed for development purposes; and,
- Initiate utility coordination meeting with affected utility providers to discuss utility relocation feasibility.

This assessment and subsequent recommendations could not have been performed without the benefit of the input from ERO International, the City of Hutto Planning Department, the City of Hutto Public Works Department, City Council and the citizens who contributed to the numerous public meetings.

Exhibit A

Character District Map

Heart of Hutto Old Town Master Plan

DRAFT CHARACTER DISTRICTS MAP

Concepts presented within are for planning purposes only.
Photographs courtesy ERO, Flickr, Gateway Planning and CNU.
GIS information provided by the City of Hutto.



Gateway
Planning

Exhibit B

Ultimate Buildout Living Unit Equivalent Calculation

**HEART OF HUTTO OLD TOWN MASTER PLAN
ULTIMATE BUILDOUT LIVING UNIT EQUIVALENT (L.U.E.) CALCULATION**

Updated: 1/7/09

LAND USE ⁽¹⁾			TOTAL AREA (ft ²)	TOTAL UNIT	L.U.E. CONVERSION FACTOR ⁽²⁾	L.U.E. EQUIVALENT
THE CO-OP SITE	Retail	Mixed Use Buildings	105,000	N/A	0.00060 L.U.E./ft ²	64
		Live/Work Units	23,000	N/A	0.00167 L.U.E./ft ²	38
	Commercial/ Office	Cinema	30,000	N/A	0.00060 L.U.E./ft ²	18
		General Commercial	28,000	N/A	0.00033 L.U.E./ft ²	9
		Market Place	27,000	N/A	0.00060 L.U.E./ft ²	16
	Civic	Original Gin Building	12,000	N/A	0.00033 L.U.E./ft ²	4
		City Hall	34,000	N/A	0.00033 L.U.E./ft ²	11
	Urban Residential	Town Homes	N/A	33	0.7 L.U.E./unit	23
		Live/Work Units	N/A	33	0.7 L.U.E./unit	23
		Lofts and Apartments	N/A	147	0.5 L.U.E./unit	74
THE CO-OP SITE SUBTOTAL						281
T-4 CORE	Retail	Mixed Use Buildings	8,700	N/A	0.00060 L.U.E./ft ²	5
		Live/Work Units	16,000	N/A	0.00167 L.U.E./ft ²	27
		On East Street	39,800	N/A	0.00060 L.U.E./ft ²	24
	Commercial/ Office	Mixed Use Buildings	13,000	N/A	0.00060 L.U.E./ft ²	8
		General Commercial	40,000	N/A	0.00033 L.U.E./ft ²	13
	Urban Residential	Town Homes	N/A	20	0.7 L.U.E./unit	14
		Live/Work Units	N/A	19	0.7 L.U.E./unit	13
		Lofts and Apartments	N/A	42	0.5 L.U.E./unit	21
T-4 CORE SUBTOTAL						125
T-4 TRANSITION	Retail	Live/Work Units	20,000	N/A	0.00167 L.U.E./ft ²	33
		Commercial/ Office	General Commercial	42,000	N/A	0.00033 L.U.E./ft ²
	Urban Residential	Town Homes	N/A	33	0.7 L.U.E./unit	23
		Live/Work Units	N/A	33	0.7 L.U.E./unit	23
T-4 TRANSITION SUBTOTAL						94
T-4 URBAN RESIDENTIAL - North	Retail	Live/Work Units	22,000	N/A	0.00167 L.U.E./ft ²	37
		Urban Residential	Town Homes	N/A	37	0.7 L.U.E./unit
	Live/Work Units		N/A	37	0.7 L.U.E./unit	26
	Courtyard Apartments		N/A	60	0.5 L.U.E./unit	30
	Adaptive Reuse		N/A	40	0.7 L.U.E./unit	28
	Multi-Unit Homes		N/A	16	0.7 L.U.E./unit	11
	Flats		N/A	10	0.7 L.U.E./unit	7
	T-4 URBAN RESIDENTIAL - North SUBTOTAL					
T-4 URBAN RESIDENTIAL - South	Retail	Mixed Use Buildings	25,000	N/A	0.00060 L.U.E./ft ²	15
		Live/Work Units	45,000	N/A	0.00167 L.U.E./ft ²	75
	Urban Residential	Town Homes	N/A	80	0.7 L.U.E./unit	56
		Live/Work Units	N/A	75	0.7 L.U.E./unit	53
		Courtyard Apartments	N/A	53	0.5 L.U.E./unit	27
		Adaptive Reuse	N/A	8	0.7 L.U.E./unit	6
		Multi-Unit Homes	N/A	12	0.7 L.U.E./unit	8
		Flats	N/A	74	0.7 L.U.E./unit	52
T-4 URBAN RESIDENTIAL - South SUBTOTAL						291
T-4 ARTERIAL COMMERCIAL	Commercial/ Office	North of SH 79	50,000	N/A	0.00033 L.U.E./ft ²	17
		South of SH 79	112,000	N/A	0.00033 L.U.E./ft ²	37
		T-4 ARTERIAL COMMERCIAL SUBTOTAL				

Note(s):

1. Land use information obtained from ERO International, LLP Ultimate Buildout Calculations dated 10/24/08.
2. L.U.E. conversion factor obtained from City of Austin Water and Wastewater Utility L.U.E. criteria.

Heart of Hutto Old Town Master Plan
ULTIMATE BUILDOUT CALCULATIONS

50 year buildout for overall plan

October 24, 2008

Prepared by Milosav Cekic, Gateway Planning Group

A. THE CO-OP SITE — 5-10 year buildout for co-op site

1. Retail	
i. In mixed use buildings	106 K SF
ii. In live/work units	23 K SF
2. Commercial/office	
i. Cinema	30 K SF
ii. General commercial	28 K SF
iii. Market place	27 K SF
3. Civic	
i. Original gin building	12 K SF
ii. City Hall	34 K SF
4. Urban residential	
i. Town Homes	33 Units
ii. Live/Work Units	33 Units
iii. Lofts and apartments	147 Units

□ 5-story allowed
□ average of
3-story anticipate
throughout co-op
site.

Assumptions:

1. Average loft/apartment size 1,000 SF
2. Breakdown between TH and L/W units – 50/50
3. Average TH or L/W units size 1,650 SF
4. Retail in L/W units on ground level – 600 SF per unit
5. Land uses in mixed use buildings
 - a. Retail on the entire first floor
 - b. Office – 30% of the rest
 - c. Residential – 70% of the rest

Note: Totals are not provided to allow for information grouping as needed.

Heart of Hutto Old Town Master Plan
ULTIMATE BUILDOUT CALCULATIONS

October 24, 2008

Prepared by Milosav Cekic, Gateway Planning Group

B. T-4 CORE

10-20 yr. buildout

(or 20-30 yr?)

1. Retail
 - i. In mixed use buildings 8.7 K SF
 - ii. In live/work units 16 K SF
 - iii. On East Street 39.8 K SF
2. Commercial/office
 - i. In mixed use buildings 13 K SF
 - ii. General commercial 40 K SF
3. Civic 0 K SF
4. Urban residential
 - i. Town Homes 20 Units
 - ii. Live/Work Units 19 Units
 - iii. Lofts and apartments 42 Units

Assumptions:

1. Average loft/apartment size 1,000 SF
2. Breakdown between TH and L/W units – 50/50
3. Average TH or L/W units size 1,650 SF
4. Retail in L/W units – 600 SF per unit
5. Land uses in mixed use buildings
 - a. Retail on the entire first floor
 - b. Office – 30% of the rest
 - c. Residential – 70% of the rest

Note: Totals are not provided to allow for information grouping as needed.

Heart of Hutto Old Town Master Plan
ULTIMATE BUILDOUT CALCULATIONS

October 24, 2008

Prepared by Milosav Cekic, Gateway Planning Group

C. T-4 TRANSITION

20-30 yr. build out

- | | |
|-----------------------|----------|
| 1. Retail | |
| i. In live/work units | 20 K SF |
| 2. Commercial/office | |
| i. General commercial | 42 K SF |
| 3. Urban residential | |
| i. Town Homes | 33 Units |
| ii. Live/Work Units | 33 Units |

Assumptions:

1. Average loft/apartment size 1,000 SF
2. Breakdown between TH and L/W units – 50/50
3. Average TH or L/W units size 1,650 SF
4. Retail in L/W units – 600 SF per units
5. Land uses in mixed use buildings
 - a. Retail on the entire first floor
 - b. Office – 30% of the rest
 - c. Residential – 70% of the rest

Note: Totals are not provided to allow for information grouping as needed.

Heart of Hutto Old Town Master Plan
ULTIMATE BUILD-OUT CALCULATIONS

October 27, 2008

Prepared by Milosav Cekic, Gateway Planning Group

D. T- 4 URBAN RESIDENTIAL – North

50 yr. build out

1. Retail
 - i. In live/work units 22 K SF
2. Urban residential
 - i. Town Homes 37 Units
 - ii. Live/Work Units 37 Units
 - iii. Courtyard apartments 60 Units
 - iv. Adaptive reuse 40 Units
 - v. Multi-Unit Homes 16 Units
 - vi. Flats 10 Units

D. T- 4 URBAN RESIDENTIAL – South

50 yr build out

3. Retail
 - i. In mixed use buildings 25 K SF
 - ii. In live/work units 45 K SF
4. Urban residential
 - i. Town Homes 80 Units
 - ii. Live/Work Units 75 Units
 - iii. Courtyard apartments 53 Units
 - iv. Cottage homes w/courtyard 8 Units
 - v. Multi-Unit Homes 12 Units
 - vi. Flats 74 Units

Assumptions:

1. Average flat/apartment size 1,000 SF
2. Breakdown between TH and L/W units – 50/50
3. Average TH or L/W units size 1,650 SF
4. Retail in L/W units – 600 SF per unit
5. Land uses in mixed use buildings
 - a. Retail on the entire first floor
 - b. Office – 30% of the rest
 - c. Residential – 70% of the rest

Note: Totals are not provided to allow for information grouping as needed.

Heart of Hutto Old Town Master Plan
ULTIMATE BUILDOUT CALCULATIONS

October 24, 2008

Prepared by Milosav Cekic, Gateway Planning Group

E. T-4 ARTERIAL COMMERCIAL

10-50 yr Build out

1. Commercial/office
 - i. North of SH 79 50 K SF
 - ii. South of SH 79 112 K SF

Assumptions:

1. Average loft/apartment size 1,000 SF
2. Breakdown between TH and L/W units – 50/50
3. Average TH or L/W units size 1,650 SF
4. Retail in L/W units – 600 SF per unit
5. Land uses in mixed use buildings
 - a. Retail on the entire first floor
 - b. Office – 30% of the rest
 - c. Residential – 70% of the rest

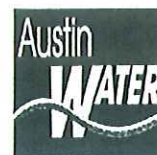
Note: Totals are not provided to allow for information grouping as needed.



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LIVING UNIT EQUIVALENT (LUE) GUIDANCE DOCUMENT

Definition: A living unit equivalent (LUE) is defined as the typical flow that would be produced by a single family residence (SFR) located in a typical subdivision. An LUE is assumed to represent 3.5 people living in a residence. For water requirements, this includes consumptive uses, such as lawn watering and evaporative coolers. The wastewater system does not receive all of these water flows, so the calculated flows differ between water and wastewater. The number of LUEs for a project is constant; only the water and wastewater flows are different.

WATER

Details on calculating the Water Utility Requirements for a project can be found in the Utilities Criteria Manual (UCM 2.9.2). The UCM is available online at: http://www.amlegal.com/austin_techmanuals/

WASTEWATER

Details on calculating the Wastewater Utility Requirements for a project can be found in the Utilities Criteria Manual (UCM 2.9.3)

For Service Extension Request (SER) projects the following Wastewater Peak Flow Factor can be used:

Peak Flow Factor = $[18 + (0.0206 \times F)^{0.5}] / [4 + (0.0206 \times F)^{0.5}]$, Maximum = 4

The Following LUE Conversions can be used to estimate flows for various development types (Use is Not Mandatory; if using other factors please explain how the factors better represent a specific development).

Proposed Development Intended Use (Residential)	LUE CONVERSION (L.U.E. per Unit)
Single Family Residence; Modular Home; Mobile Home:	1
Duplex:	2
Triplex; Fourplex; Condo Unit; P.U.D., Apartment Unit (6+ Units/Acre to 24 Units/Acre):	0.7
Condo or Apartment Unit (24+ Units/Acre):	0.5
Hotel or Motel Room:	0.5
Proposed Development Intended Use (Commercial)	LUE CONVERSION (Units per L.U.E.)
Office (Square Feet of Floor)	3000
Office Warehouse (Square Feet of Floor)	4000
Retail; Shopping Center (Square Feet of Floor)	1660
Restaurant; Cafeteria (Square Feet of Floor)	200
Hospital (Beds)	1
Rest Home (Beds)	2
Church (Worship Services Only) (seats)	70
High School (Includes Gym and Cafeteria) (Students)	13
Elementary School (Includes Gym and Cafeteria) (Students)	15

DRAFT: June 18, 2008

Exhibit C

On-Site Conceptual Water Line Improvements



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